AMENDMENTS TO THE CLAIMS:

Claim 1 (Original): A method for performing biological assay in a microfluidic biochip platform providing constant and consistent reaction volume defining a reaction zone, the method comprising the steps of:

(a) providing a plurality of microfluidic channels with a constant cross-section area;

(b) immobilizing at least one biological probe on said reaction zone; and

(c) transporting fluid in said microfluidic channels to said reaction zone, a portion of said fluid reacting with said at least one probe, wherein said reaction volume is product of said cross-section area multiplied with length of said microfluidic channels having said at least one biological probe.

Claim 2 (Original): The method as defined in claim 1, wherein a portion of said microfluidic channels has serpent-like structure, said serpent-like structure overlaying with at least a portion of said reaction zone.

Claim 3 (Currently amended): The method as defined in claim 1 ~~or 2~~, wherein said microfluidic channels have dimension between 0.5 μm and 2 mm in cross-section.

Claim 4 (Currently amended): The method as defined in claim 1 ~~or 2~~, the microfluidic biochip platform further comprising at least one sample source and at least one reagent solution, wherein a portion of said microfluidic channels is connected to said at least one sample source and to said at least one reagent solution.

Claim 5 (Currently amended): The method defined in claim 1 ~~or 2~~, wherein said fluid in said microfluidic channels is moved by a pressurizing mechanism for providing a forward-moving fluid.

Claim 6 (Currently amended): The method defined in claim 1 ~~or 2~~, the method further comprising the steps of:

(a) immobilizing said at least one biological probe on magnetic beads;

(b) transporting said magnetic beads through said microfluidic channels;

(c) providing at least one external magnet from magnet sources beneath said reaction zone; and

(d) switching on said at least one external magnet to trap said magnetic beads.

Claim 7 (Original): The method defined in claim 2, wherein said biochip platform further comprises:

(a) said at least one biological probe immobilized on said reaction zone of a base plate;

(b) said microfluidic channels patterned on a bottom surface of a top plate; and

(c) said top plate coupled on top of said base plate.

Claim 8 (Currently amended): The ~~microfluidic biochip platform~~ method according to claim 1 ~~or 2~~, wherein said probe is protein.

Claim 9 (Currently amended): The ~~microfluidic biochip platform~~ method according to claim 1 ~~or 2~~, wherein said probe is nucleic acid.

Claim 10 (Currently amended): The ~~microfluidic biochip platform~~ method according to claim 1 ~~or 2~~, wherein said probe is biological cell.

Claim 11 (Currently amended): The ~~microfluidic biochip platform~~ method according to claim 1 ~~or 2~~ further comprising ~~an optical detector located above~~ the step of detecting reaction in said reaction zone.

Claim 12 (Withdrawn): A method for performing biological assay in a biochip with an array of microfluidic channels providing flexible and controllable immobilization for at least one biological probe, the method comprising the steps of:

(a) immobilizing said at least one biological probe on magnetic beads;

(b) selecting at least one of said magnetic beads and transporting said magnetic beads through one of said microfluidic channels;

(c) providing at least one external magnet beneath a portion of said microfluidic channels; and

(d) switching on said at least one external magnet for immobilization of at least one of said at least one biological probe.

Claim 13 (Withdrawn): The method defined in claim 12, wherein said external magnets have on and off switching mechanisms for immobilizing or removing said biological probe in said microfluidic channels; and an electronic means for controlling said on and off switching mechanisms.

Claim 14 (Withdrawn): The method as defined in claim 12, wherein said microfluidic channels have dimension between 0.5 μm and 2 mm in cross-section.

Claim 15 (Withdrawn): The method as defined in claim 12, the biochip further comprising at least one sample source and at least one reagent solution, wherein a portion of said microfluidic channels is connected to said at least one sample source and to said at least one reagent solution.

Claim 16 (Withdrawn): The method defined in claim 12, wherein said fluid in said microfluidic channels is moved by a pressurizing mechanism for providing a forward-moving fluid.

Claim 17 (Withdrawn): The biochip according to claim 12, wherein said probe is protein.

Claim 18 (Withdrawn): The biochip according to claim 12, wherein said probe is nucleic acid.

Claim 19 (Withdrawn): The biochip according to claim 12, wherein said probe is biological cell.

Claim 20 (Withdrawn): The biochip according to claim 12 further comprising an optical detector located above said microfluidic channels.